

Patent Application # 10/082,723

Page 3 of 15

1 SYSTEM FOR INEXPENSIVELY EXECUTING ONLINE PURCHASES

2 BACKGROUND OF THE INVENTION

3 This invention relates to payment of online purchases, and more particularly to a
4 system that executes such payments in a efficient and cost-effective manner so as to make
5 it economical to sell and purchase online products and services priced as low as just a few
6 pennies per item.

7 The major issues that confront online purchasing systems are fraud, security,
8 execution speed, and transaction costs. The last of these issues, transaction costs, is of
9 particular concern to Internet vendors because of the nature of products typically sold
10 over the Internet, and price expectations of their customers. Many of the products and
11 services provided over the Internet are information-based, with virtually zero incremental
12 cost of goods and small cost of delivery. As such, customers have expectations of low
13 prices for such goods and services. Such expectations, coupled with the cost and
14 inconvenience of executing online transactions have contributed to the commonly used
15 practice of companies giving away software and information for free.

16 Existing electronic payment methods are either costly, slow to consummate, or
17 both. For example, debit cards typically costs \$0.50 per transaction. (Banks also impose
18 dollar limits on the amount that can be debited.) Electronic check payments are only
19 slightly better. Electronic bill payment systems typically charge users around \$0.20 per
20 transaction, and can take several days to deliver payment to the Internet-based merchant.
21 "Electronic Cash" systems have been developed to support on-line transactions.
22 However such e-cash systems have yet to be adopted on a broad scale, and their cost-
23 effectiveness when used exclusively for low-value items has yet to be established.

Patent Application # 10/082,723

Page 4 of 15

1 The "free information" model (paid for by advertising) actually works to the
2 disadvantage of Internet users. Since vendors cannot economically collect the small
3 revenue associated with each transaction, there is little financial incentive for small-
4 transaction businesses to emerge on the Internet, thereby limiting the richness of products
5 and resources available to users. Furthermore, many free Web sites that do exist tend to
6 be overloaded, resulting in long waits times, because the Web site owners cannot afford
7 to invest in infrastructure that would improve responsiveness.

8 A low-cost online purchasing system can stimulate more diversity and
9 competition in Internet-based services. Such products and services might include, for
10 example, drawings, maps, greeting cards, publications, recipes, search services, advice
11 services, sales alerts, stock alerts, weather and traffic alerts, and buying services. Thus a
12 purchasing system that could economically execute transactions of arbitrary size would
13 benefit both customers and vendors, and further stimulate e-commerce.

14 A new paradigm is also needed for the way financial institutions are reimbursed
15 for supporting the transactions of online vendors. Specifically, instead of charging online
16 vendors on a per-transaction basis, banks may charge online vendors for maintaining
17 accounts. Alternatively, banks may charge online vendors based on the dollar volume of
18 transactions processed by the bank on behalf of the vendor. Still another model is for
19 banks to serve as an Internet portal through which buyers are authenticated for making
20 purchases from online vendors, with banks charging online vendors for access through
21 the portal. This model is analogous to mall operators charging shops in the mall rental
22 space and security fees. It is also clear that some combination of the above models is also
23 a possibility. The present invention supports all of the business models described above.

Patent Application # 10/082,723

Page 5 of 15

1 BRIEF SUMMARY OF THE INVENTION

2 A system for making online purchases by executing internal electronic funds
3 transfers from the buyers' bank account to the vendor's bank account, enabled by an
4 intermediate funds transfer from the buyer's account to a holding account maintained by
5 the buyer's bank or a third party. The system is further enabled by the buyer's bank
6 acting as a portal to the Internet that pre-authenticates buyers, enforces security, and
7 speeds the execution of online transactions.

8 BRIEF DESCRIPTION OF THE DRAWINGS

9 The drawing is a schematic of an exemplary embodiment of a system according to
10 the present invention for making online purchases by executing electronic funds transfers
11 from buyer accounts to payee accounts, enabled by a system of holding accounts,
12 maintained by the banks or a third party.

13 DETAILED DESCRIPTION OF THE INVENTION

14 The drawing is a schematic of an online purchasing system according to the
15 present invention. Buyers 11, 12, and 13, banks 21, 22, and 23, and application server 4
16 are connected by a network 3. Within the scope of the present invention, a network 3,
17 may be replaced by a system of networks interconnecting the various elements of this
18 invention so as to provide greater security or some other benefit to the system. The
19 schematic has been simplified to show just three buyers 11, 12, 13 and three banks 21,
20 22, 23, but the same system can be extended to support any number of buyers and banks.

21 Within each bank 21, 22, and 23, resides three types of accounts, buyer accounts
22 71, 72, and 73, payee accounts 61, 62, and 63, and holding accounts 51, 52, 53. Without
23 loss of generality, only one buyer account and one payee account are shown within each

Patent Application # 10/082,723

Page 6 of 15

1 bank for clarity of discussion, although the same system can be implemented to support
2 any number of buyer accounts and payee accounts residing in each bank. In practice each
3 bank will host multiple buyer and payee accounts. For the present invention, the term
4 "operator" refers to an agent that controls movement of funds into and out of a particular
5 account. Buyer accounts 71, 72, and 73 are owned and operated by buyers 11, 12, and
6 13, respectively. Payee accounts 61, 62, and 63 are owned and operated by online
7 vendors. Holding accounts 51, 52, and 53 are owned and operated by either the banks 21,
8 22, and 23, respectively in which holding accounts 51, 52, and 53 reside, or a third party.
9 The operator of the holding accounts 51, 52, and 53 is also authorized to move funds out
10 of buyer accounts 71, 72, and 73 and into payee accounts 61, 62, and 63. For the present
11 invention, the term "service bureau" refers to the operator of the holding accounts,
12 whether that operator is a collection of banks or a third party.

13 For the purposes of the present invention, the term "Internet portal" refers to an
14 application that performs services for buyers that enable either greater access to Web
15 pages or greater functionality for those Web pages visited by buyers. Buyers 11, 12, and
16 13 initiate the purchasing process by logging onto the application server 4 that serves as
17 an Internet portal for buyers 11, 12, and 13. The application server 4 authenticates each
18 buyer 11, 12, and 13 using authentication systems and routines well known to individuals
19 skilled in the art. For example, the application server 4 may prompt buyers 11, 12, and
20 13 to enter a private Personal Identification Number or PIN, to validate their identities.
21 Further, the application server 4 assures that only one instance of each buyer 11, 12, and
22 13 is logged on at any particular time, and that sufficient funds are in each buyer account
23 71, 72, and 73 to cover purchases as they arise. At the time that they log on, the

Page 6

Thomas Cannon

10 identifies the item to be purchased. Since buyers 11, 12, and 13 are logged onto the
11 Internet through the application server 4, the application server knows the identity of
12 buyers 11, 12, and 13, including their email addresses, unique session codes, and buyer
13 accounts 71, 72, and 73. Further, the application server 4 knows the identify of the online
14 vendor and whether it maintains an account at one of the banks 21, 22, 23, served by the
15 system. Prospective buyers 11, 12, and 13 need only give online vendors their unique
16 session codes at the time that they wish to make a purchase.

17 The application server 4 executes online purchases via a four-step process. First,
18 the application server 4 checks to determine if the online vendor maintains a payee
19 account 61, 62, or 63 with any of the banks 21, 22, and 23 served by the system. If
20 negative, the purchase is denied. If positive, the second step is for the application server
21 4 to instruct the service bureau to debit the buyer's account 71, 72, or 73 and credit the
22 corresponding holding account 51, 52, or 53 that resides within the same bank 21, 22, or
23 23 for the amount of the purchase. The debit is only permitted if buyer 11, 12, or 13 has

Page 7

Thomas Cannon

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